

**REMARKS**

The Applicants thank the Examiner for the examination to date and respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow.

**I. Status of the Claims**

Independent claim 4 is amended with minor editorial changes to clarify the claim language. Independent claim 6 is amended with minor editorial changes similar to claim 4 and to further recite the pot life of the recited composition. Support for the recitation of the pot life and the definition of pot life can be found in, *inter alia*, ¶[0028] of the published Specification. Claims 8 and 11 are cancelled to avoid redundancy. Claim 9 is amended to reflect the cancellation of claim 8. The Applicants reserve the right to pursue the subject matter of the cancelled claims in a continuation application. No new matter is introduced, and claims 4-7, 9-10, 12, and 16-18 are pending to be examined on their merits.

**II. Claims Rejections – 35 U.S.C. § 112**

Claims 6-9, 16, and 18 are rejected under 35 U.S.C. § 112, ¶1, as allegedly failing to comply with the written description requirement, particularly regarding the recitation of “at room temperature.” Claims 6 and 11 are rejected under 35 U.S.C. § 112, ¶2, as allegedly being indefinite. The Applicants respectfully traverse these rejections.

Contrary to the Office’s assertion in ¶4 of the Office Action, the Applicants respectfully submit that the present Specification provides sufficient support for the recitation of “at room temperature” in present independent claim 6. The Applicants respectfully direct the Office’s attention to Example 2 in the present Specification. As described in ¶[0058] of the present Specification,

“After evacuation of a base resin and a curing agent at 60°C<sup>1</sup> for about 2 hours, they **were cooled to room temperature**. They were **then stirred and mixed** at a molar ratio...” (Bold emphasis added).

In view of the disclosure provided in the present Specification, such as that provided above, one of ordinary skill in the art would readily appreciate that the mixing (or “impregnation”) occurs at room temperature. Thus, contrary to the Office’s assertion on in ¶4 of the Office Action, the present Specification supports the recitation of “at room temperature.”

Solely to expedite prosecution and without acquiescing in the correctness of the rejection, the Applicants have amended claims 6 and 11, and thus respectfully submit that at least in view of the foregoing amendments, the rejections under 35 U.S.C. § 112, ¶2, should now be moot.

### **III. Claims Rejection – 35 U.S.C. § 102**

Claims 4, 11, and 17 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by US 5,071,613 (“Fukami”). The Applicants respectfully traverse the rejection.

While not acquiescing to the grounds of the rejection, present independent claim 4 is amended to clarify that the polyol (i) comprises at least one bifunctional polyol having an average molecular weight of from 100 to 250 and (ii) does not comprise a chain extender. The Applicants respectfully submit that (i) Fukami does not disclose the presently claimed polyol, particularly with respect to the average molecular weight of the bifunctional polyol and (ii) the Office has misconstrued Fukami’s teachings, as evidenced in ¶11 of the Office Action.

Fukami does not at all teach using a bifunctional polyol having an average molecular weight of from 100 to 250, as recited in present claim 4. At the outset, the Office’s assertions regarding the calculations of the molecular weight in ¶11 (*see also* ¶ 30 of the April 24, 2009 Office Action) indicate that the Office has misconstrued the present claims and Fukami’s teachings. As provided in the present Specification, the term “average molecular weight” in the

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<sup>1</sup> Contrary to the Office’s apparent reference to this temperature as the impregnation temperature, this refers to an isocyanate component and a polyol component being degassed or deaerated by an evacuator.

present claims is a molecular weight of a single molecule (or polymer) as measured by a standard method such as gel permeation chromatography (GPC). *See* ¶ 0035]. In contrast to the Office’s assertion, this is not an average of molecular weights of two or more different polymers.

Accordingly, the lower molecular weight polyols of Fukami do not have the presently recited feature of “bifunctional polyol having an average molecular weight of from 100 to 250.”

Specifically, to the extent that Fukami discloses polyols (as referenced by the Office in Fukami, col. 2, lines 50-56), Fukami discloses “lower molecular weight polyols,” such as 1,4-butane diol, which has a molecular weight of 90 (which is lower than the presently claimed 100 to 250) and is a chain extender – the description of 1,4-butane diol as a chain extender is evidenced in ¶[0054] of the present Specification. This is in stark contrast to the recitation in present claim 4, wherein the polyol does not comprise a chain extender.

Because Fukami does not disclose each and every element recited in present independent claim 4, Fukami’s teachings cannot anticipate claim 4 or its corresponding dependent claims. Therefore, at least in view of the foregoing, the Applicants respectfully request that the rejection be withdrawn.

#### IV. Claim Rejection – 35 U.S.C. § 103

Claims 4, 6, 11, and 16-18 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami. Claims 4-8, 10-12, and 17-18 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami in view of US 5,032,622 (“Herrington”). Claims 5 and 12 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami in view of US 4,251,428 (“Recker”), or, in the alternative, Fukami in view of Herrington, further in view of Recker. Claim 9 is rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Fukami in view of US 4,738,999 (“Blenner”) or, in the alternative, Fukami in view of Herrington, further in view of Blenner. The Applicants respectfully traverse these rejections.

(i) Current Obviousness Standard

The U.S. Supreme Court recently reaffirmed the Graham factors for determining obviousness in *KSR Int'l Co. v. Teleflex Inc.* (No. 04-1350) (U.S., April 30, 2007). The Graham factors, as outlined by the Supreme Court in *Graham et al. v. John Deere Co. of Kansas City et al.*, 383 U.S. 1 (1966), are: 1) determining the scope and contents of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; 3) resolving the level of ordinary skill in the pertinent art; and 4) evaluating evidence of secondary consideration. The Supreme Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a) and held that the proper inquiry for determining obviousness is whether the improvement is more than the predictable use of prior art elements according to their established functions. The Court noted that it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed and specifically stated:

Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was *an apparent reason to combine the known elements in the fashion claimed* by the patent at issue. To facilitate review, this analysis should be made explicit.

*KSR Int'l Co. v. Teleflex Inc.*, slip op. at 14 (emphasis added). As discussed below, the cited art cannot render the claimed invention obvious.

(ii) Present claims are non-obvious over the teachings of Fukami and/or Herrington

**Fukami**

The teachings of Fukami and Herrington, alone or in combination, do not render the present claims obvious. As described in the previous section, Fukami does not teach every element recited in present independent claims 4 and 6. Particularly, Fukami does not at all teach

or suggest that the bifunctional polyol has the specific average molecular weight as recited in the present claims. Fukami also does not at all disclose that the impregnating step is carried out at room temperature. The Office in ¶16-17 of the Office Action alleges that one of ordinary skill in the art would arrive at the presently recited “at room temperature” because it would be obvious to select a temperature that is “below the reaction temperature of the reactants.” At the outset, the Office has not established any evidence of the value of the reaction temperature in relation to room temperature, and thus the Office’s alleged desire to reduce the temperature to room temperature appears to be merely hand waving. In fact, contrary to the Office’s position, the Applicants respectfully submit that the reaction temperature of the presently claimed isocyanate and polyol is below room temperature. *See* ¶ [0055]-[0056], and Table 2. Thus, contrary to the Office’s assertion, one would not have a reason to select a temperature that is “below” the reaction temperature of the reactants.

Moreover, the Applicants respectfully traverse the Office’s assertion in ¶18 of the Office Action. The Applicants respectfully submit that the Office has established no evidence that the presently claimed polymer would be the same as that of Fukami. In fact, the Applicants have provided above that Fukami does not at all teach the presently claimed polymers. Thus, the Office’s assertion in ¶18 of the Office Action is incorrect.

#### **Fukami and Herrington**

Herrington’s teachings do not remedy any of Fukami’s deficiencies, as described above. In fact, the Office’s reasons to combine Herrington’s teachings with Fukami’s teachings further demonstrate that the present claims are non-obvious over these teachings.

Nowhere does Herrington teach or suggest using a bifunctional polyol having an average molecular weight of from 100 to 250, as recited in the present claims. Herrington merely discloses that the use of an active hydrogen-containing material having an equivalent weight of 125 to 350 provides a polyurethane foam with a Tg in the desired range and that the high Tg polyol is preferably a polyether polyol having a functionality of 2 to 8, more preferably 2 to 6.

The equivalent weight of 125 to 350 corresponds to a molecular weight of 250 to 700, when the active hydrogen-containing material has a functionality of 2.

The Office relies on Herrington's teaching because Herrington teaches a material with high Tg and thus "one would be motivated to raise the Tg to temperatures of 120 °C since it would prevent unwanted deformation at elevated temperatures, i.e., 80 °C." Office Action, ¶23-24. This is not true. In fact, as provided in the present Specification,

"An increase in Tg, however, shortens the pot life. Accordingly, it is a **technical problem** to attain both higher Tg..." (Emphasis added) ¶[0017]

The present invention provides the unexpected results of providing both a high Tg and an extended pot life, such as that recited in present claim 6. See ¶ [0014], [0017], [0018], [0035], [0038], and [0055], and Table 2 of the present Specification. Thus, contrary to the Office's assertion, without the present invention, one of ordinary skill in the art would not have had a reason to raise the Tg to result in an undesirably short pot life. Therefore, even assuming, *arguendo*, that the teachings of Fukami and Herrington were combined, the unexpected results of the present invention rebut any *prima facie* case of obviousness.

(iii) Neither Recker's teachings nor Blenner's teachings remedy the aforementioned deficiencies

Contrary to the Office's assertions, Recker and Blenner, alone or in combination, do not remedy any of the deficiencies described above. In fact, Recker teaches away from the present invention by disclosing the use of **a chain extender** (see Recker, col. 2, lines 40-68; independent claim 7), which is in stark contrast to the present claims, wherein the polyol does **not** comprise a chain extender. Thus, one of ordinary skill in the art would not have had a reason to combine the teachings of Recker and Blenner with those of Fukami and/or Herrington. Even if these teachings were combined, the present invention would not have resulted. Further, the aforementioned unexpected results rebut any *prima facie* case of obviousness. .

Therefore, at least in view of the foregoing, the Applicants respectfully request that the rejections be withdrawn.

**CONCLUSION**

The Applicants believe that the present application is now in condition for allowance and respectfully request favorable reconsideration of the application.

The Office is invited to contact the undersigned by telephone if a telephone interview would advance the prosecution of the present application.


The Office is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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